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HANDBOOK FOR SUCCESSFUL PLANNING, INSTALLATION, AND MONITORING OF WILDLIFE WATERERS

by

Robert S. McCarty, Jr.

Technical Bulletin 86-1
January 1986

BUREAU OF LAND MANAGEMENT
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Boise, Idaho 83706

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Handbook for Successful Planning, Installation and Monitoring of Wildlife Waterers

by

Robert S. McCarty, Jr.
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Idaho Falls District
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The lack of free water has long been recognized as a major limiting factor on wildlife distribution in desert areas. In 1982, Robert McCarty completed the Little Lost Birch Creek Antelope Habitat Management Plan (HMP) for the Big Butte Resource Area, Idaho Falls District Office. He identified water development using pipelines and guzzlers as a major objective in improving pronghorn antelope distribution and habitat use.

There are now 61 wildlife waterers within the Big Butte Resource Area where Mr. McCarty is the Area Wildlife Biologist. Most of the waterers utilize the tank system designed by Ted Johnson of the Washington Department of Game. Of the 61 waterers, 29 have rainfall catchments and 32 are on pipelines. Roughly half of the waterers are within the Antelope HMP. Bob has documented heavy use by antelope and other wildlife through observations, tracks, and time-lapse photography.

These waterers are ideal "volunteer" projects with 18 of them being constructed by sportsmens' groups, Boy Scouts, Idaho Department of Fish and Game, and other groups. The AEC Sportsmens' Club has been outstanding in this effort. The One Shot Antelope Hunt Foundation paid for materials for five of the projects. Finally, O'dell Frandsen, the Idaho Falls District Manager, has been fully supportive of these efforts.

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Robert S. McCarty, Jr.

USDI, Bureau of Land Management, 940 Lincoln Rd., Idaho Falls, ID 83401

ABSTRACT

This technical bulletin describes the installation, maintenance and monitoring of wildlife watering systems that operate independently from livestock watering systems. The Idaho Falls District, Bureau of Land Management has successfully applied this design on range improvement projects in semi-arid parts of southeast Idaho. Independent water for wildlife eliminates problems often encountered with livestock water developments by providing a year-long drinking source separate from user-maintained troughs.

Materials, installation and placement details presented provide biologists in similar areas a guide to an inexpensive technique for water development programs. Monitoring and maintenance schedules necessary to assess the success of individual facilities complete the bulletin.

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BACKGROUND

Bureau of Land Management (BLM) land-use plans typically stipulate that all newly developed water systems be maintained throughout the summer. When livestock are not using the water-developed pasture, the person assigned to maintenance (usually the licensed grazer) may have no desire to operate the water facilities. Cattle often are rotated through different areas within an allotment by providing water at livestock troughs during certain times of the grazing season and leaving them dry at others.

Some wildlife can become dependent on developed water sources. If these sources dry up, the animals must either disperse (move to adjacent habitat with water) or die. The water source should be maintained for wildlife until fall, but this can result in pipeline damage from freezing if weather conditions suddenly change.

Some wildlife species avoid cattle troughs because livestock concentrations near the water are high during grazing season. Vegetative cover often is limited at livestock troughs due to heavy foraging by cattle. This can reduce the variety of wildlife that would benefit from water developments that consist of livestock troughs only.

TECHNIQUE

Managers and wildlife biologists have recognized these problems in many areas. Designs that have solved these problems for the Idaho Falls District involve providing separate facilities for wildlife use on pipelines and constructing rainfall catchments (guzzlers).

Pipelines offer an opportunity to construct wildlife waterers without building a rainfall catchment. If the nearest water is a few miles away, a wildlife drinking facility can expand and improve habitat for some species.

Wildlife needs are met on pipelines by installing a storage tank with a ramp allowing animals access to the water. The tank is filled from a spur line off the main pipeline. Trickle feeders are available to let water drip out of the spur line into the tank. However, experience shows the tricklers often clog with sediment from the spring source. The screens can be difficult to clean. A more reliable method is to install a valve on the spur line. The tanks then can be filled by opening the valve during routine maintenance checks.

A self-filling system that collects rainfall can provide water where pipelines are not feasible. Several designs are available for these "guzzler" developments. The design described in this paper is inexpensive, easy to install and relatively maintenance free. The Washington State Department of Game engineered the storage tank for upland game birds. Idaho BLM installations have been used by pronghorn, sage grouse, mule deer, elk, chukars, morning doves and numerous non-game animals.

SPECIFICATIONS

Tank

The 500-gallon tank (Figure 1) or "cistern" is made of fiberglass. A separate fiberglass top is reinforced by encapsuled wood. The ramp surface is

roughened by course sand bonded to the fiberglass. This provides a rough surface that wildlife can use to walk down to the water without slipping into the tank. The top is a dark color, inhibiting sunlight and subsequent algae growth. The cube-shaped bottom lets water freeze in winter without breaking the cistern. Two or more cisterns will stack-up together to allow easy transport in the back of a pick-up truck.

The Idaho Falls District has purchased tanks from commercial fiberglass companies in Boise, Idaho and Walla Walla, Washington. Other fiberglass manufacturers should have the capability to produce this design, once they have fabricated a suitable mold. However, proper thickness of the fiberglass and reinforcement of the lid and ramp must be as specified on Figure 1. The specifications provide the strength necessary to withstand pressures from freezing and weight of any animal that may come in for a drink. Cattle may gain access to the tank, even when a fence surrounds the installation, if the wires break and maintenance is not timely.

Catchments

The catchment (Figure 2) is an elevated roof-like apron. The design can be modified by adding side wings or extending the length to increase the water yield. The apron illustrated will provide enough water to fill the tank with 6 inches of rainfall. This is a good size for 8-12 inches annual rainfall, since it allows extra surface area for water recharge during summer storms. Table 1 lists the materials necessary for a completed guzzler development.

TABLE 1

Materials For Tank and Catchment

Item Number	Quantity	Description	Cost * Each	Total
1	1 ea.	Fiberglass guzzler tank	$342.78	$342.78
2	8 ea	Sheets, galvanized roofing 29 gauge 12'x26"	8.04	64.32
3	6 ea.	4"x4"x8' (treated or cedar)	4.70	28.20
4	8 ea.	2"x6"x12' lumber	3.12	24.96
5	15 ea.	2"x4"x8' lumber	1.45	21.75
6	5 lb.	2" galvanized nails with neoprene washers	2.21	11.05
7	14 ea.	7/16"x6" bolts and washers	.86	12.04
8	6 ea.	7/16"x7" bolts and washers	1.39	8.34
9	5 lb.	16d nails	.69	3.45
				$516.89

Fence

Facilities that are located near livestock use areas should be fenced. A one-acre minimum livestock exclosure is recommended. A three-strand fence with a smooth bottom wire will protect the water source from livestock and allow access to big game. Spring sources where pipelines are developed should be similarly fenced to improve habitat and protect spring head boxes. Table 2 lists materials needed for a one-acre livestock exclosure. Figure 3 details BLM specifications for an antelope-type barbed wire fence.

A newly marketed fence corner (Easy Fence)** can be used in place of wood post corners to save labor. The "Easy Fence" design uses steel posts rather than wood posts on corners. They are more expensive but the time and effort saved during installation is substantial. Eight panels are necessary for four corners, priced at $31.95* per panel.

* Based on 1985 prices in Idaho Falls.

** The use of trade names does not imply endorsement by the U.S. Government.

TABLE 2

Fencing Materials for a One-acre Livestock Exclosure

Item Number	Quantity	Description	Cost* Each	Cost* Total
1	20 each	Wood posts (butt treated 7'x6")	$ 2.65	$ 53.00
2	8 each	Wood brace posts (8'x3")	$ 1.56	$ 12.48
3	40 each	Steel fence posts	$ 2.74	$109.60
4	2 rolls	Barbed wire	$ 31.88	$ 63.76
5	1 rolls	Smooth wire (twisted)	$ 27.44	$ 27.44
6	40 each	Fence stays	$ .19	$ 7.60
7	120 each	Fence clips 3 (50/pack)	$ 1.42	$ 4.26
8	2 lbs	Fence staples	$ .50	$ 4.00
				$279.14

PLACEMENT

Wildlife waterers on pipelines do not allow much flexibility in placement. They must be located near the main pipeline. Guzzlers afford more flexibility in choosing a site because they need not be attached to a pipeline. Where possible, try to locate the wildlife facilities away from livestock troughs. This will reduce the chance of livestock congregating near the water source.

Suitable sites should have at least 3 feet of mineral soil to allow easy installation for the tank, catchment and fence posts. Sandy areas should be avoided to reduce the chance of wind-blown soil entering the tank. Avoid gullies and washes where flooding may fill the tank with silt or damage it.

* Based on 1985 prices in Idaho Falls.

Where possible, conceal the wildlife waterer from roads. This affords security to the wildlife using the facility and reduces the chance of vandalism. Habitat characteristics and wildlife use patterns should be inventoried before installation to achieve maximum use from target species. A water source that works well but services no wildlife is as useless as one that doesn't hold water. Developments located near water sources that dry up in mid-summer (i.e. small reservoirs and water-haul troughs) are quickly adopted by wildlife. Developments in totally dry areas may not be discovered as quickly by many animals. Mourning doves seem to find the new water sources soon after installation. Pronghorn and sagegrouse use them regularly during extended dry spells. Successful placements in mule deer, elk and bighorn sheep habitat require more knowledge of annual use patterns.

INSTALLATION

These water developments are easy to install. They provide excellent projects for volunteer groups. Sportsmen's clubs and Boy Scouts have installed several guzzlers in the Idaho Falls District since 1980 when this design was adopted. An experienced eight-person crew can install the tank and catchment in about four hours. Fence construction takes longer and requires additional tools (fencepost pounders, wire, stretchers, etc.) The following tools are necessary for installation of the tank and catchment:

- hammers
- shovels
- tamping bars
- pick
- pulaskis
- post-hole diggers or gas-powered auger
- generator
- open end wrenches (12")
- level
- string
- extension cord (50')
- tape measure
- chain saw
- power drill (7/16"x8" bit)

The installation can be accomplished with less, but this equipment list will make the job easier. In areas where access by vehicles is impossible, the tool list can be reduced to accomodate the necessary mode of transport.

Refer to Figure 2 for design specifications for the rainfall catchment. The slope of the apron can be adjusted depending on the slope of the land. Constructing the apron on a gentle slope can cut down the height of 4x4 posts shown in Figure 2. The bottom end of the apron should overlap the storage tank ramp by 1 or 2 inches. Figure 2 depicts an apron that overlaps to the middle of the ramp. This is unnecessary and could result in loss of some recharge water by over-shooting the tank. Leave about 10 inches between the tank lid and the bottom of the catchment brace to allow the lid to be removed during maintenance.

The pictures following Figure 2 show volunteers and Idaho Department of Fish and Game personnel installing a tank and catchment. Also shown is a small tank with a trickler hose from a livestock pipeline. The small tank is adequate where pipelines are operated throughout the summer and a constant trickle of water is provided.

Where precipitation catchments are used, two or more 500-gallon tanks may be necessary to provide water through the hot, dry period. During the summer of 1980, several of the 500-gallon guzzlers in the Big Desert needed refilling by August. Subsequent guzzler installations have been built to hold 1,000 gallons of water. To date, these sources have not required refilling other than during routine maintenance.

MAINTENANCE AND MONITORING

The tanks require cleaning every 2-3 years to maintain water quality. BLM fire crews usually carry the necessary equipment to perform these operations. The Idaho Falls fire crew has been able to accomplish all required maintenance on 25 guzzlers in the Big Desert. Maintenance responsibilities also have been assigned to the Idaho Department of Fish and Game on several developments. A portable pump is used to empty the old water and high-pressure fire hoses are used to scour the sides. A scouring brush or broom can be substituted if no fire truck is available. If the tanks are cleaned in mid-summer, they should be refilled.

A "Job Documentation Report" (JDR) should be prepared to enter the project into the BLM Automated Data Processing System. A sample JDR is attached (Figure 5). The JDR system records information regarding construction, location and maintenance. A notebook containing maps and detailed directions to each project should be maintained at the field office.

All facilities should be inspected annually. Maintenance needs should be documented on a "Job Inspection Report" (Figure 6) for fire crew or force account work. Fences will require periodic maintenance.

The only major maintenance need for this design in Idaho Falls was caused by a wildfire. The fire burned over one guzzler, destroying all the corner posts of the fence and part of the catchment. The tank was unharmed.

Monitoring is important to prove the success of your installation. At a minimum, monitoring should involve checking all developments on a set schedule for maintenance needs. Wildlife observations can be noted on the maintenance report.

A simple monitoring technique involves removing the vegetation from a small area in front of the ramp to register animal tracks. Bird use will be obvious from droppings on the catchment and tank lid. More elaborate monitoring schemes involving time-lapse cameras can be rewarding.

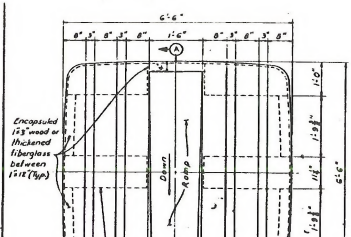
Monitoring of the Idaho Falls District water facilities has revealed use by antelope, mourning doves, sage grouse, mule deer, elk, and many non-game species. Most wildlife use occurs during July and August when the livestock has moved off BLM onto other lands. This is usually the period of highest water demand by wildlife and least available water from natural sources.

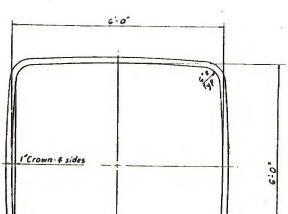
SUPPORT NEEDS

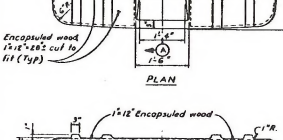
More than 60 wildlife waterers have been installed in the Idaho Falls District over the last 10 years. Pipelines, guzzlers and spring developments were installed by contractors, livestock operators, BLM operations personnel, volunteers and the Young Adult Conservation Corps (YACC). Land-use plans identified water development as a key element to improving land management by increasing both livestock and wildlife distribution in arid areas of the district. Funding became available from several sources following approval of land-use plans. Sources include the BLM wildlife program, range improvement money and donations.

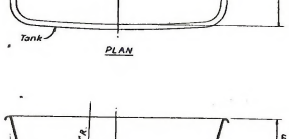
Cost sharing with the state fish and game department or local interest groups helps ease the financial burden and creates an atmosphere of cooperation and good will. Groups of interested people often volunteer labor for installation, if the materials and supervision are supplied by BLM. The One Shot Antelope Hunt Foundation donated money for 5 guzzlers, which were installed by volunteers and Idaho Fish and Game personnel in 1982.

Installation of these systems is fairly easy. Most of the work has to be done before the digging begins. Authorization and funding are major time and energy consumers. Thorough coordination is required with the resource area, the operations division, and program leaders during project planning and installation. As with most interdisciplinary efforts, one hour of "dirt work" requires many hours of planning, coordination, and cooperation.









STATE OF WASHINGTON
DEPARTMENT OF GAME

GUZZLER
Self-Filling

Designed By: Ted Johnson

NOTES:
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2. All p
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5. Fiber
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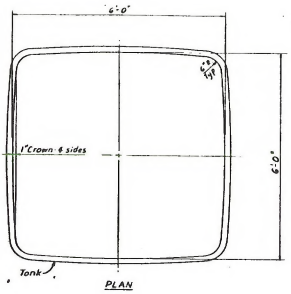
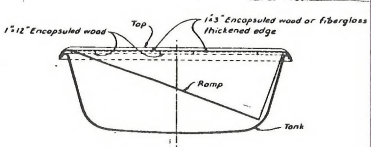
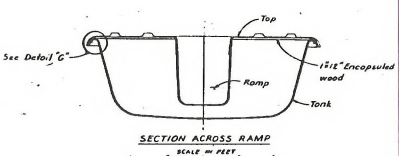
Figure 1



PLAN

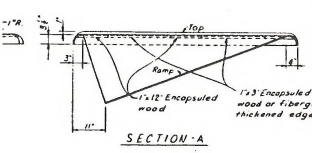


SECTION THRU RAMP

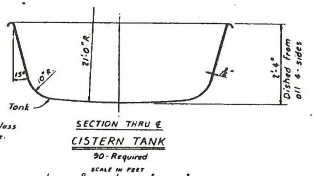


SECTION ACROSS RAMP

SCALE in FEET 0 1 2 3



SECTION - A

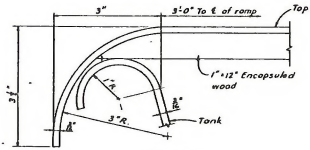


SECTION THRU ℄

CISTERN TANK

90 - Required

SCALE in FEET 0 1 2 3



DETAIL - G

ASSEMBLY DETAILS

SCALE in INCHES 0 1 2 3

STATE OF WASHINGTON

DEPARTMENT OF GAME

GUZZLER

Self-Filling

Designed By: Ted Johnson

NOTES:

1. Ramp surface shall be course sand bonded to fiberglass.
2. All parts completely waterproof.
3. Color - Interior and Exterior, light brown.
4. All Bids to include Delivery and Destination cost.
5. Fiberglass construction.

Tooling/mold supplied by bid recipient.

6. Reinforcing in top of unit shall be 1"x3" and 1"x12" wood encapsulated in fiberglass and resin.
7. Dimensions and thickness of fiberglass parts as shown shall be no less than $\frac{3}{16}$" in thickness and ± $\frac{1}{4}$" in any dimension.
8. The form of casting shall be of hand laid matting.

Figure 1

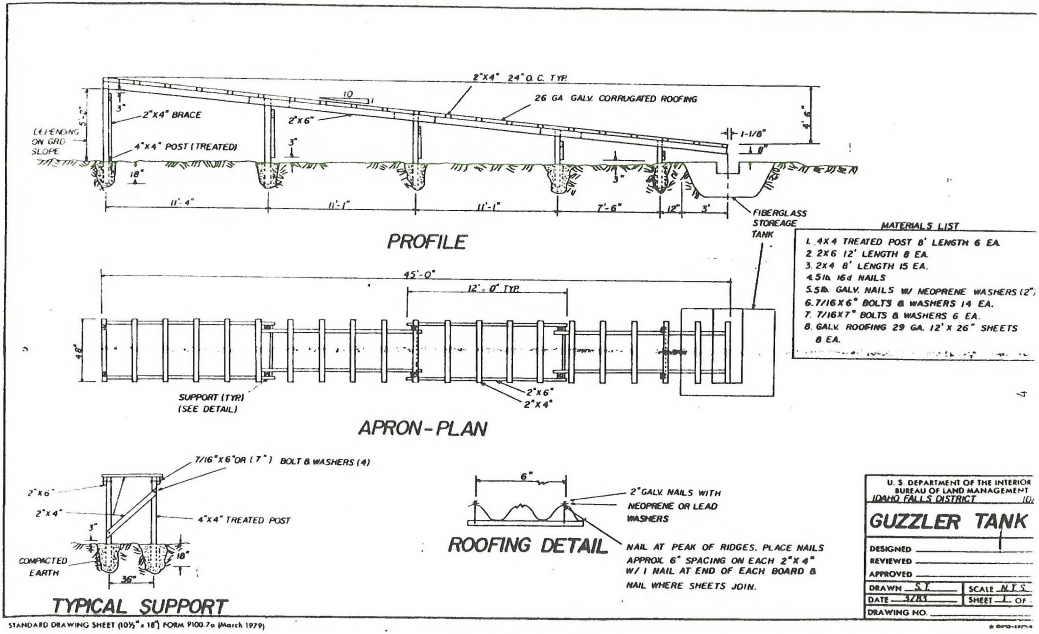
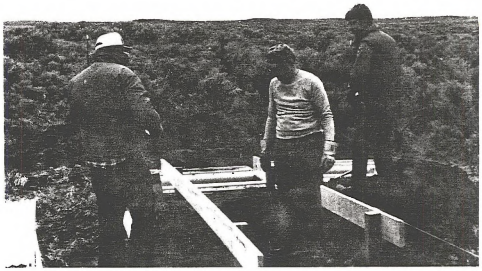

2"X4" 24" O.C. TYP.
26 GA GALV. CORRUGATED ROOFING
2"X4" BRACE
2"X6"
4"X4" POST (TREATED)
DEPENDING ON GRD SLOPE
1-1/8"
FIBERGLASS STOREAGE TANK
PROFILE
45'-0"
12'-0" TYP.
SUPPORT (TYP.) (SEE DETAIL)
2"X6"
2"X4"
APRON-PLAN
7/16"X6" OR (7") BOLT & WASHERS (4)
2"X6"
2"X4"
4"X4" TREATED POST
COMPACTED EARTH
36"
TYPICAL SUPPORT
6"
2" GALV. NAILS WITH NEOPRENE OR LEAD WASHERS
ROOFING DETAIL
NAIL AT PEAK OF RIDGES. PLACE NAILS APPROX. 6" SPACING ON EACH 2"X4" W/ 1 NAIL AT END OF EACH BOARD & NAIL WHERE SHEETS JOIN.
MATERIALS LIST
1. 4X4 TREATED POST 8' LENGTH 6 EA.
2. 2X6 12' LENGTH 8 EA.
3. 2X4 8' LENGTH 15 EA.
4. 5 lb. 16d NAILS
5. 5 lb. GALV. NAILS W/ NEOPRENE WASHERS (2")
6. 7/16X6" BOLTS & WASHERS 14 EA.
7. 7/16X7" BOLTS & WASHERS 6 EA.
8. GALV. ROOFING 29 GA. 12' X 26" SHEETS 8 EA.
U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
IDAHO FALLS DISTRICT
GUZZLER TANK
DESIGNED
REVIEWED
APPROVED
DRAWN S.T.
SCALE N.T.S.
DATE 3/83
SHEET 1 OF
DRAWING NO.
STANDARD DRAWING SHEET (10½" x 18") FORM 9100.7a (March 1979)

Figure 2

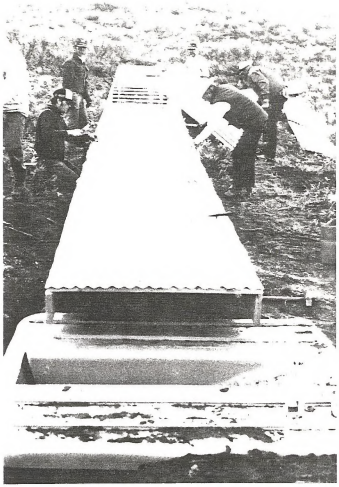
A hole 6 feet square and about 2 feet deep is required for installation of the cistern. Level the tank using loose soil or sand for bedding the bottom. Fill around the sides of the tank and lightly tamp with a shovel handle. The lid should be just above ground level to allow easy removal for maintenance.



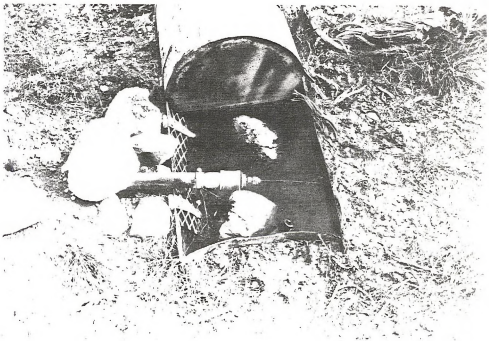
The 4"X4" cedar posts are set into the ground 18" deep. Bolt the 2"x6" lumber to them with the 7/16" bolts. (Note the string stretched along the top of the 2X6" to keep the line straight and the slope constant for the apron).

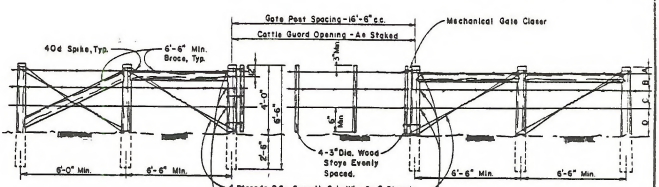
The 2"X4"s are sawed to 4' lengths and nailed to the top of the 2"X6"s. This provides the frame work for the tin. The boards should be spaced close enough to hold the tin securely (minimum of 30" spacing is recommended).

The tin sheets are nailed to the 2"X4"s using roofing nails. The apron should be constructed low to the ground to reduce wind stress and visual intrusiveness. (Note the bottom of the apron is high enough above the tank to allow removal of the lid for maintenance).



A small tank watered from a livestock pipeline. The trickler device allows a constant flow through the summer (unless it clogs with sediment). Larger storage tanks are necessary if water is not available through the dry period of the year.

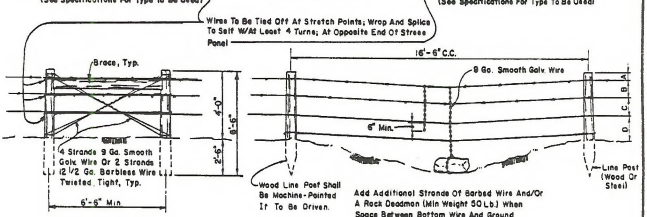




END PANEL-TYPE ONE
(See Specifications For Type To Be Used)

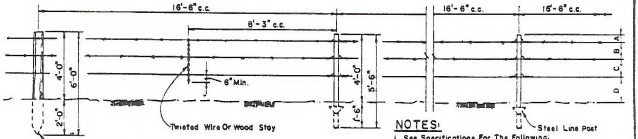
WIRE GATE

END PANEL-TYPE TWO
(See Specifications For Type To Be Used)



STRESS PANEL

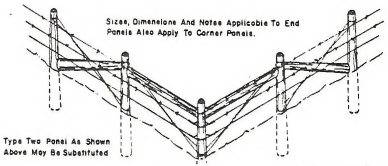
PANEL AT MINOR DEPRESSION



NOTES:

1. See Specifications For The Following:
   - A. Ratio Of Steel To Wood Line Posts.
   - B. Number Of Stays. (Space Evenly Between Posts).
   - C. Type Of End Panel To Be Used.
   - D. Type Of Wire To Be Used For Top And Bottom Strand.
   - E. Spacing Between Strands.
   - F. Type Of Gate(s) To Be Used.
   - G. Type Of End Panels To Be Used For Corner Panel To Be Used.
2. At All Junctures Of Post & Braces, Mortise 1" Deep.

LINE PANELS



Corner Panel May Be Constructed Using Type One End Panels Or Type Two End Panels. Refer To Specifications For Type Of End Panels To Use.

CORNER PANEL

Figure 3

ALWAYS THINK SAFETY

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DIVISION OF ENGINEERING DENVER SERVICE CENTER

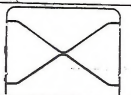
BARBED WIRE FENCE
TYPE-B

DESIGNED BY OTHERS	
REVIEWED	
APPROVED	
DRAWN P.W. TWIST	SCALE N.T.S
DATE APRIL 20, 1982	SHEET OF
DRAWING NO. 02445-2	

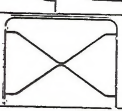
BY D-C INDUSTRIES
EASY FENCE
Derrald Chappell
Box 23
Coalville, UT 84017
Phone (801) 336-2404

FACTORY DIRECT PRICE LIST

CLAMPS INCLUDED



PANEL AND BRACE	PRICE
1-49	31.95
50-99	30.95
100 plus	29.95



PANEL	PRICE
1-49	22.98
50-99	21.98
100 plus	20.98

BRACE	PRICE
1-49	10.98
50-99	9.98
100 plus	8.98

STEEL GATE POST	PRICE
1-9	32.98
10 plus	29.98

F.O.B. COALVILLE, OR PROVO, UTAH
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

SHIPPING WEIGHT
Single panel 19.3 pounds
Single brace 8.7 pounds

Specify the truck line you prefer.
Time in route approximately two weeks.

PATENT PENDING

Figure 4

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

I – GENERAL DESCRIPTION — Card 1

5. Job Name (11–30): DEADMAN CYN WTR #2

LOCATION CODES

6. Special Project Code (31–34): BBWL
7. Resource Area Planning Unit (35–38): 4801
8. Subregion (39–42): 1704 9. County (43–45): 023
10. Watershed Area Number (46–48):
11. Allotment Number (49–52):
12. Wildlife Habitat Area (53–56):
13. Wild Horse, Burro Area Number (57–60):
14. Meridian (61–62): 21
15. Township (63–67): 0040N
16. Range (68–72): 0280E 17. Section (73–74): 19
18. Subdivision (75–78): NWSW

SITE AND VEGETATION DESCRIPTION

19. Present SSF (79–80):
20. Percent Slope (81–82):
21. Exposure (83): 22. Soil Texture (84):
23. Precipitation *(inches)* (85–86):
24. Elevation *(feet)* (87–91):
25. Vegetation Subtype (92–94):

COMPOSITION *(Percent)*

26. Grasses (95–96): 27. Forbs (97–98):
28. Browse (99–100):

COVER *(Percent)*

29. Vegetation (101–102): 30. Litter (103–104):
31. Bare Ground (105–106):

II – ANNUAL WORK PLAN INPUT DATA — Card 2

75. Subactivity (11–14): 4350
76. Component-Job Code (15–18): 5557

UNITS PLANNED

77. Primary (19–24): 10
78. Secondary (25–29): 500

TIME OF AWARD

79. Fiscal Year (30–31): 84 80. Third (32): 2

TIME OF COMPLETION

81. Fiscal Year (33–34): 84 82. Third (35): 2

BLM COST

83. Method (36): 5
84. Material (37–41): 500
85. Contract (42–47): 0

CONTRIBUTED COST

86. Material (48–52): 0
87. Labor/Equipment (53–57): 600

MAINTENANCE

88. Responsibility (58): 6 89. Cycle (59–61): 403

JOB IDENTIFICATION

1. State (2–3): ID 2. District (4–5): 03
3. Job Number (6–9): 4721
4. Transaction Code (10): 2

III – JOB DETAILS AND BENEFITS — Card 3

37. Primary Job Objective (11): 7

PLANT AND PEST CONTROL

39. Chemical (12): 42. Method (13):
45. Mechanical – Method (14):

ARTIFICIAL REVEGETATION

47. Pounds Seed/Acre (15–17):
48. Seedlings/Acre (18–21):
49. Method (22):
51. AUM's Livestock Forage Added (23–26):
52. Future SSF (27–28):

WATERSHED TILLAGE

54. Method (29):

FACILITIES

55. Type (30): 56. Other Misc. (31):

WATER DEVELOPMENT/CONTROL

59. Type (32–33): 14
60. Water Filing Number (34–39):
STORAGE (Ac. Ft.) 61. Flood (40–45):
62. Silt (46–51):

WILDLIFE HABITAT DEVELOPMENT/PROTECTION

63. Type (52–53): 24
64. Primary Species (54–56): 610
65. Animal Months (57–61): 02400
66. Number Increase (62–66): 00200
67. Pounds Fish Increase (67–71):
68. Rare/Endangered (72):

VISITOR DAYS ADDED

69. Fisherman (73–76):
70. Hunter (77–80):
71. Other (81–84):

IV – PROGRESS REPORT — Card 4

COMPLETION DATA

UNITS 90. Primary (11–16): 10
91. Secondary (17–21): 500
TIME 92. Fiscal Year (22–23): 84
93. Third (24): 2
94. Job Cost (25–30): 500
95. Work-Months (31–33): 1

CONTRIBUTION DETAIL

96. Agreement (34): 6 97. Contributor (35): 6
98. Contributor's Name (36–55): AEC SPORTSMEN CLUB

CONTRIBUTIONS

99. Deposited (56–60):
UNDEPOSITED 100. Materials (61–65):
101. Labor/Equipment (66–70): 600

V – DETAIL OF UNITS AND COSTS — ESTIMATE — ACTUAL

WORK DESCRIPTION AND MATERIALS (a)	UNITS EA.MILE,ETC. (b)	UNITS COST (c)	BLM COSTS MATERIALS (d)	BLM COSTS CONTRACT (e)	COOPERATOR COSTS MATERIALS (f)	COOPERATOR COSTS LABOR (g)
Tank & Catchment	1 ea	500	500			600
TOTALS Materials			500			
Labor Equipment						600

Figure 5

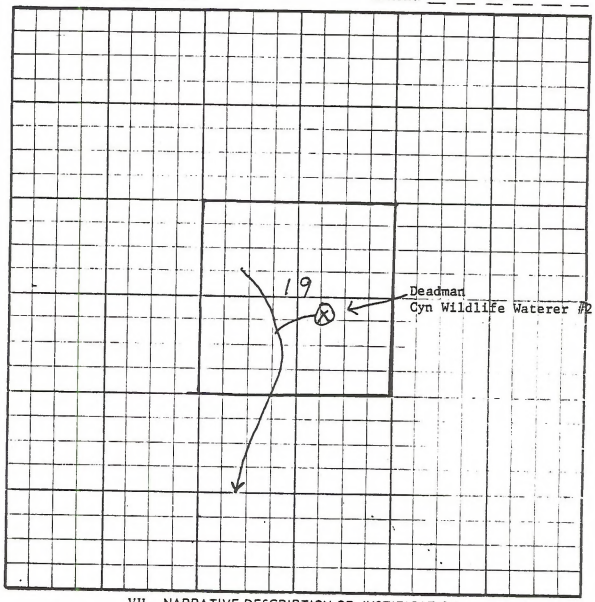
Form 1732–1 (August 1981)

JOB IDENTIFICATION | STATE | I | D | DISTRICT | 0 | 3 | JOB NUMBER | 4 | 7 | 2 | 1 |

VI – LOCATION PLAT

T. 4 N R. 28 E

Scale 1 inch = ½ Mile
Meridian B O I S E



VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

1 – 500 gallon tank & catchment

Prepared by: Bob McCarty	Title: Wildlife Biologist	Date: 4/5/85
Approved by:	Title:	Date:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Job Number: 4 4 9 2

JOB INSPECTION RECORD AND MAINTENANCE SCHEDULE

Maintenance responsibility —

1. State	2. District	3. Planning Unit	4. Job Name
I D	0 3		Packsaddle Well Wildlife Waterer

5. Location T. 2 S., R. 30 E. Sec. 30, ¼ Sec. NW

6. Type of improvement Wildlife Waterer

7a. Last inspection *(date)*: 6/13/85

b. Condition or success of improvement: [X] good [ ] fair [ ] poor [ ] failure

c. Apparent reasons for failure or success

Water was a bit low, some filling was needed.

8a. Recommended action
[X] Normal maintenance [ ] Reconstruction [ ] Salvage or other use
[ ] Abandon [ ] Other

b. Describe needed repairs or treatment

Valve may need a little work with this dry summer, this waterer may need to be visited again in mid-to-late July to be filled again. Flat wire needed on bottom.

c. Estimated cost of maintenance needs $	d. Last maintenance completed *(date)*
9a. Fiscal year work programmed	b. Next inspection *(date)*

Remarks *(include recommendation on remedial management practices, etc., and support with photographs)*

Water is relatively clean. Some bird sign at, near guzzler. Numerous at waterer. Some filling around guzzler was required. That was taken care of with some dirt and rocks. Some animal must have dug out a depression next to the tank for shade and coolness. A king snake was spotted near the pump. The pumpman had also killed a rattlesnake at the pump which he hung on the barbed wire. Dead mouse found in metal valve tank.

Signature of Inspector	Title	Date
William R. Waryas	SCA	6/24/85

INSTRUCTIONS – District Office prepares one copy. File in District maintenance inventory file.

Form 7120-3 (Sept. 1971) (formerly 7330-5)

GPO 842-445

Figure 6

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

Form 1279-3
(June 1984)

BORROWER

QL 84.2 L352 no.

Handbook for su
planning, inst.

DATE LOANED	BORROWER
	390
	OR-136 We
12/1/87	Vincent Wehme
12/31/87	Greg NobleCom(307 Pinedale RA Due;1
JAN 13 '88	John Augsburger60 Safford D.O.

USDI – BLM

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047